Automated Flagger Assistance Devices (AFADs)

- Dave Jones, National Sales Manager, Safety Technologies, and member of NCUTCD's Temporary Traffic Control Committee

Automated Flagger Assistance Devices (AFADS)

- History
- Why use AFADs?
- Issues and National MUTCD Discussions
- Typical Usage
- Selection Criteria

History

- 1995 - Minnesota DOT - flagger fatality
- 1996 – MN began experimentation with AFADs
- 2003 – FHWA interim approvals
- 2009 – Included in 2009 MUTCD

Why use AFADs?

Work zones are dangerous places

- 18% of WZ fatalities involve directing or flagging traffic*
- Flaggers can be out of harm's way
- Intrusion alarm alerts entire work zone
- Save money – only need one flagger
- MNDOT study: STOP/SLOW AFADs get more motorist respect than flagger

* http://www.bls.gov/opub/mlr/2004/12/ressum2.pdf

This is why!!

INDOT flagger fatality report 901890670

- INDOT had flagmen at both ends of the construction zone
- The flagman standing on the right side of the roadway had stopped Eastbound traffic **using a hand held stop sign**. One vehicle had already stopped for the flagman.
- The approaching vehicle (V1) did not see the stopped vehicle nor the flagger and swerved to the right**, ran off the road through the grass, striking and killing the INDOT flagger**.
- IN DOT had placed multiple signs including a message board West of the zone to warn of the upcoming construction zone. V1's driver said that he did see the construction signs but when **he did not see any work in the immediate area** that he did not think that there were any workers in the area.

Why use AFADs?

- Over a 5 year period, INDOT work zone reviews found 29.6% of issues found were that the flagger was not properly positioned
- Let’s get the flagger out of harm’s way!

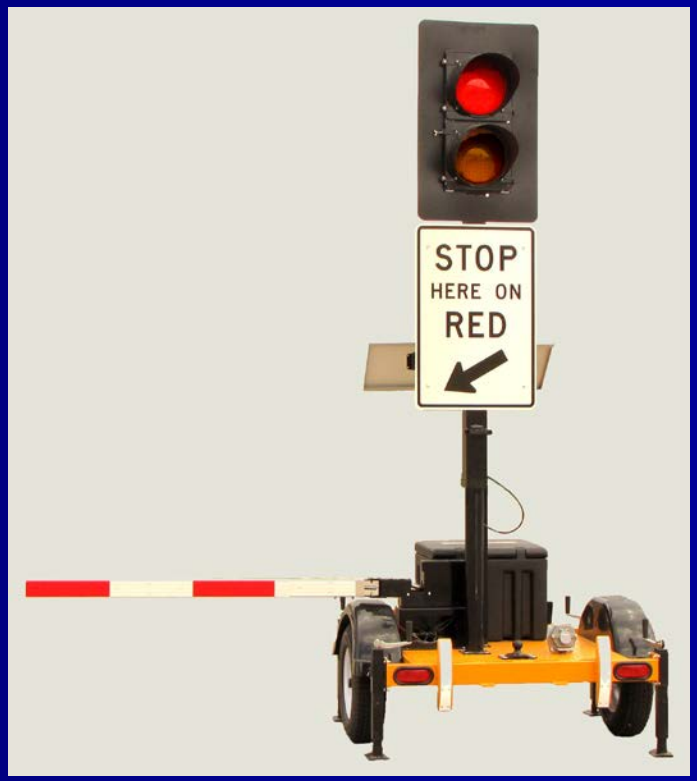
Summary: Why use AFADs?

- To protect flaggers in a dangerous environment!
- To provide the motorist with better, more obvious traffic control.

Two Types of AFADs

- STOP/SLOW sign AFADs

- Red/Yellow signal face AFADs



More Red/Yellow AFADs

Another STOP/SLOW AFAD

Issues with STOP/SLOW AFADs

- Should red signal flash?
  - Should be steady burn red, but can't be (MUTCD part 4)
  - TTI AFAD study: flashing is better
  - Motorists rarely recognized the issue
- Should gate arm be mandatory?
  - Currently is not mandatory
  - TTI study recommended yes
  - Texas MUTCD requires gate arm
  - Resolves flashing red light issue

Issues with Red/Yellow lens AFADS

- Is their visibility or “target value” adequate?
- Can color blind motorists function with just 2 colors?
  - NCUTCD had concerns about color discrimination with 2-color signal heads
  - NCUTCD did not recommend inclusion in 2009 MUTCD

Color Blind Motorists

- 7% to 10% of Americans are color blind
- Many can’t distinguish between red and yellow
  - Decision takes time and analysis
  - Need side-by-side comparisons to discriminate
  - 2 signal head units offer no positional reference

Typical AFAD Applications

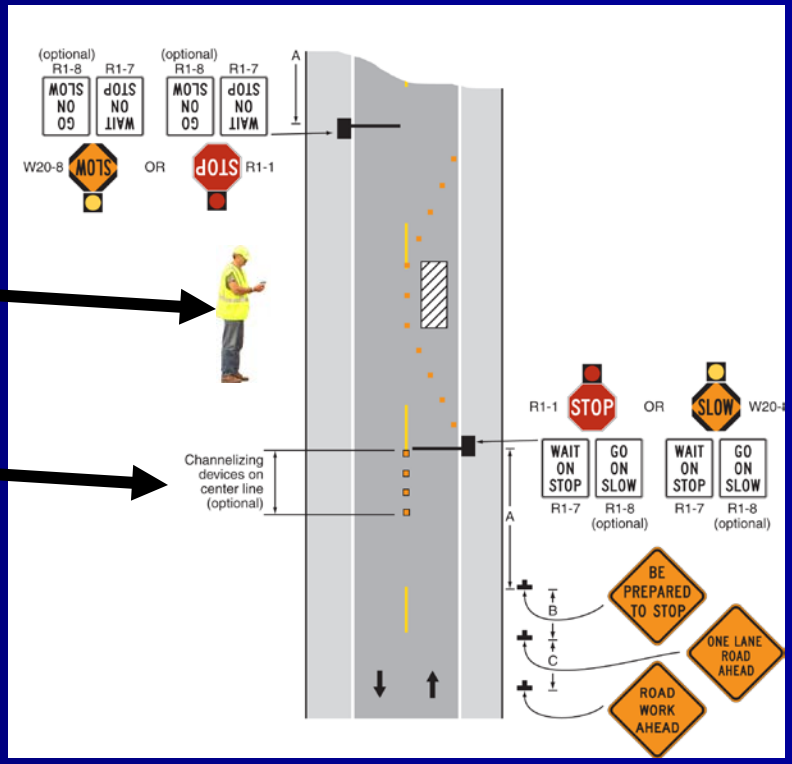
MUTCD Figure 6E-01

2 lane road, one lane closed

Flagger/operator must be able to see both ends of work zone

Note – Optional channelizing devices

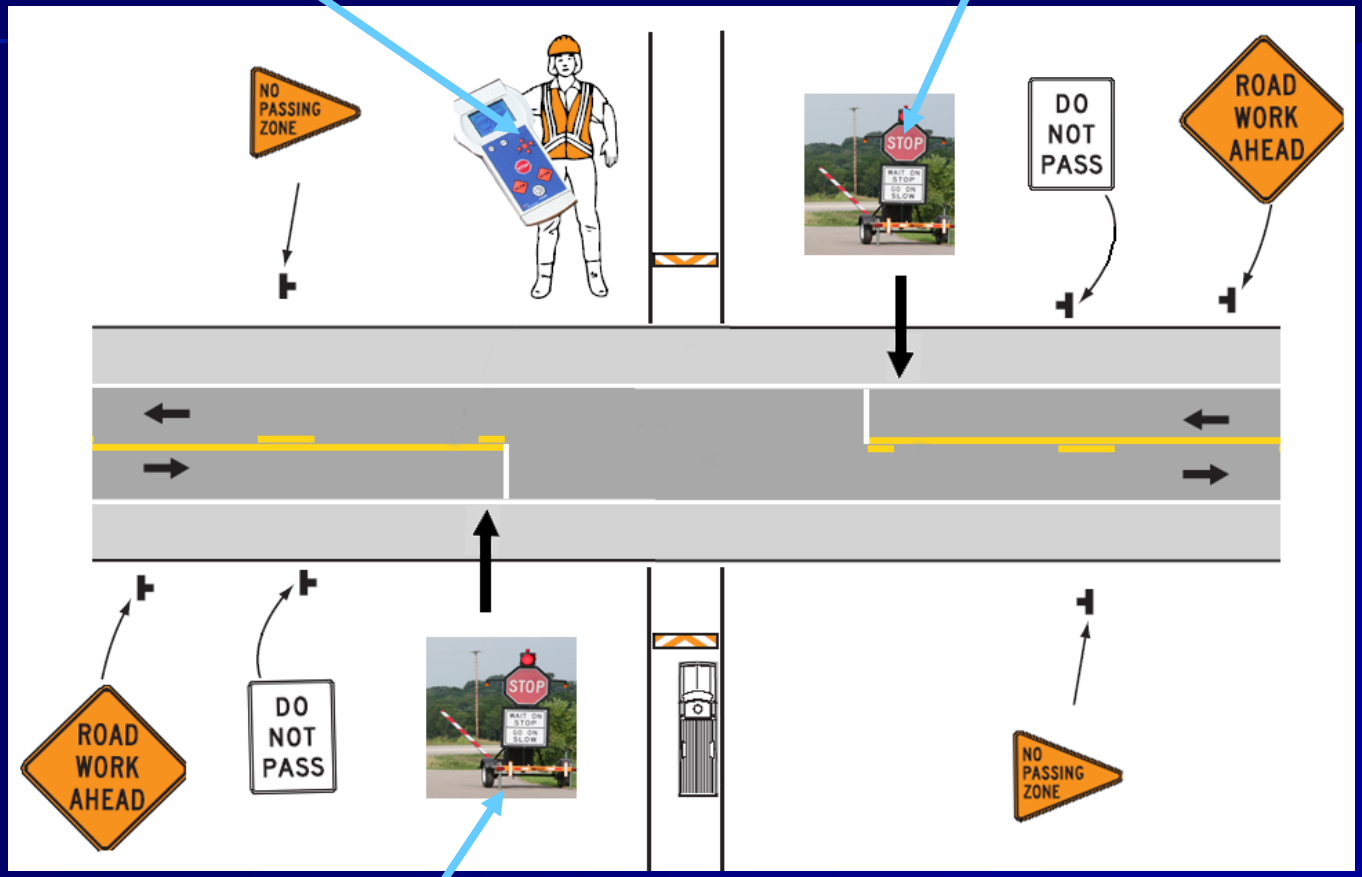
In this mode, both devices must not be able to display slow at the same time!



Uses: Haul Road – Flagger

Flagperson with Hand Held

AFAD



In this case, both signs must show slow at same time!

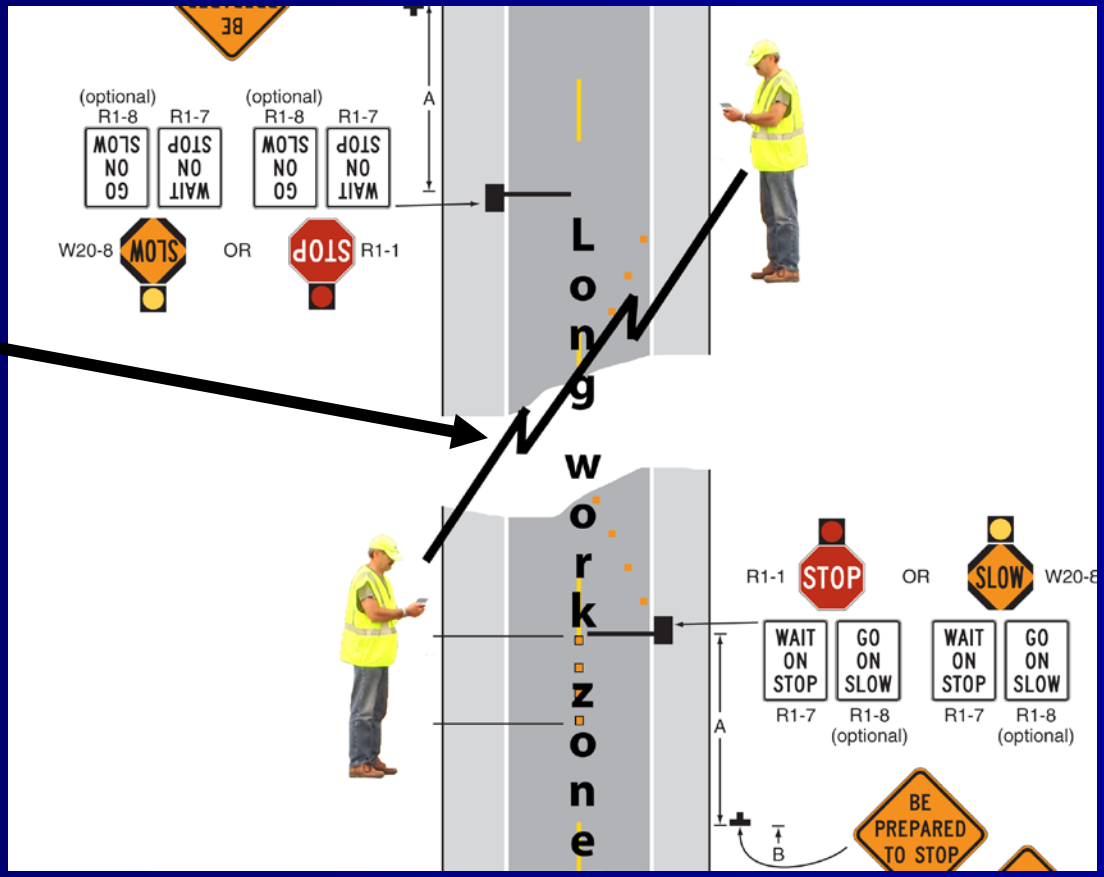
AFAD

Uses: Long work zones where one flagger can't see both ends of work zone.

The answer: Use two flaggers who communicate by radio while being located OUT OF HARM'S WAY

One flagger can control both devices

OR each flagger controls one sign



Uses: Moving Lane Closure

AFAD Selection Criteria

- **Must meet Indiana MUTCD**
  - Red/Yellow not allowed
- **For STOP/SLOW AFADS**
- Motorist safety aspects
  - Need good “target value”
  - Larger signs better for motorist visibility
  - Flashing signal and red strobe get attention
  - Taller signs visible over vehicles in queue
  - Gate arm for positive vehicle control
  - Gate arm height
  - Octagonal shape

Selection Criteria

- Flagger safety
  - Wireless remote control simple, foolproof
    - Allows flagger to be out of harm's way
    - Ability to control work zone while taking shelter from weather
  - Intrusion alarm loud, operator triggered
  - Best if all workers know sign message at all times

Selection Criteria

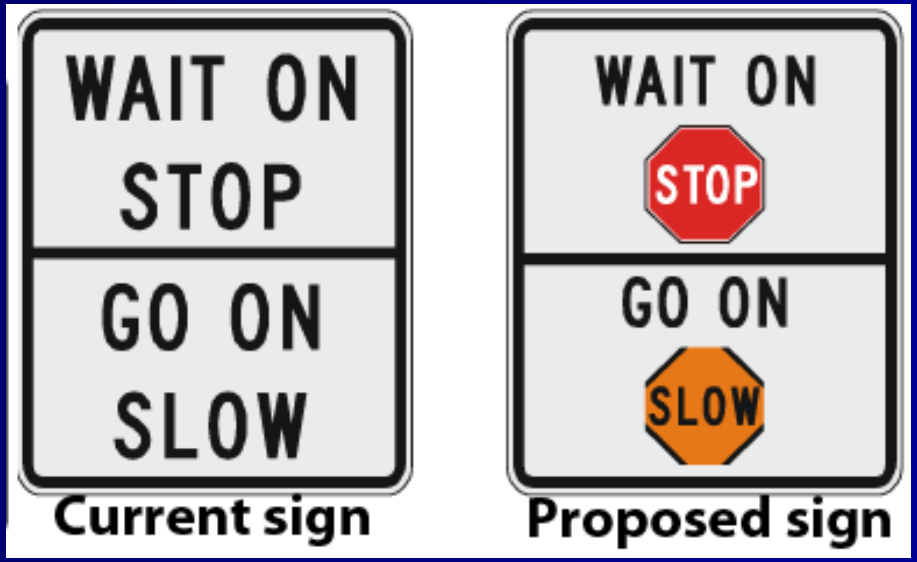
- Economical
  - Make sure single operator can tow, set up, run two units at once
  - Operational 24/7. Have everything sealed against dust, dirt, rain.
  - Guaranteed
- No FCC licensing required

Selection Criteria

- Reliable
  - Foolproof electronic communications
  - Solar Charging
  - In-yard charging or charge from vehicles
  - Operators always have fresh remote control batteries
  - Not failure prone

Possible changes coming

- Gate arms may become mandatory
- Signage may change



My Stuff

- Safety Technologies, inc. www.autoflagger.com
- AF-76 AutoFlagger™ STOP/SLOW AFAD
  - Safest unit on the market
- AF-54 AutoFlagger™ Red/Yellow AFAD
  - Less expensive
  - My opinion: Less focused on motorist safety
- My contact info: djones@autoflagger.com
- 612 581-7503

You be the Judge

18" flagger SLOW sign compared to AutoFlagger[tm] AFAD at same distance

AutoFlagger[tm] superimposed at at same distance as flagger

Thank You